# **Analytical and Quality Control Report**

William Little WTS P.O. Box 363 Building 126 3RD Floor WSMR, NM, 88002

Report Date: January 30, 2007

Work Order: 7011001

Project Name:

**HELSTF** Groundwater Samples

Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
113419	HLSF-0085-HMW-061-0107	water	2007-01-09	13:15	2007-01-09

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 29 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael Abril
Dr. Blair Leftwich, Director

### Standard Flags

 $\, B \,$  ~ The sample contains less than ten times the concentration found in the method blank.

Work Order: 7011001 HELSTF Groundwater Samples

**Analytical Report** 

Sample: 113419 - HLSF-0085-HMW-061-0107

Analysis: Alkalinity
QC Batch: 33694
Prep Batch: 29267

Analytical Method: SM 2320B
Date Analyzed: 2007-01-16
Sample Preparation: 2007-01-16

Prep Method: N/A Analyzed By: JG Prepared By: JR

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RL Parameter Flag Result Units Dilution RL mg/L as CaCo3 1.00 Hydroxide Alkalinity <1.00 mg/L as CaCo3 1 1.00 Carbonate Alkalinity < 1.00 4.00 202 mg/L as CaCo3 1 Bicarbonate Alkalinity 4.00 Total Alkalinity 202 mg/L as CaCo3 1

Sample: 113419 - HLSF-0085-HMW-061-0107

Analysis: Conductivity QC Batch: 33613 Prep Batch: 29207 Analytical Method: SM 2510B Date Analyzed: 2007-01-10 Sample Preparation: 2007-01-10

Prep Method: N/A
Analyzed By: DR
Prepared By: JR

Sample: 113419 - HLSF-0085-HMW-061-0107

Analysis: Cu, Dissolved QC Batch: 33562 Prep Batch: 29119 Analytical Method: S 6010B
Date Analyzed: 2007-01-11
Sample Preparation: 2007-01-10

Prep Method: S 3005A Analyzed By: RR Prepared By: TS

Sample: 113419 - HLSF-0085-HMW-061-0107

Analysis: Cu, Total QC Batch: 33565 Prep Batch: 29147 Analytical Method: S 6010B
Date Analyzed: 2007-01-11
Sample Preparation: 2007-01-11

Prep Method: S 3010A Analyzed By: RR Prepared By: TS

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### Sample: 113419 - HLSF-0085-HMW-061-0107

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	33640	Date Analyzed:	2007-01-11	Analyzed By:	WB
Prep Batch:	29225	Sample Preparation:	2007-01-11	Prepared By:	WB
QC Batch:	33752	Date Analyzed:	2007-01-12	Analyzed By:	WB
Prep Batch:	29287	Sample Preparation:	2007-01-11	Prepared By:	WB
QC Batch:	33757	Date Analyzed:	2007-01-16	Analyzed By:	WB
Prep Batch:	29291	Sample Preparation:	2007-01-17	Prepared By:	WB
QC Batch:	33761	Date Analyzed:	2007-01-17	Analyzed By:	WB
Prep Batch:	29295	Sample Preparation:	2007-01-16	Prepared By:	WB

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Bromide		<1.00	mg/L	5	0.200
Chloride		3230	mg/L	100	0.500
Fluoride		1.94	mg/L	5	0.200
Nitrite-N		< 1.00	mg/L	5	0.200
Nitrate-N		< 1.00	mg/L	5	0.200
Sulfate		7550	mg/L	1000	0.500

# Sample: 113419 - HLSF-0085-HMW-061-0107

Analysis: QC Batch: Prep Batch:	33565	Analytical Method: Date Analyzed: Sample Preparation:	2007-01-11	Prep Method: Analyzed By: Prepared By:	RR
		RL			

		KL			
Parameter	Flag	Result	Units	Dilution	RL
Total Phosphorous		< 0.0500	mg/L	1	0.0500

#### Sample: 113419 - HLSF-0085-HMW-061-0107

Analysis: QC Batch:	рН 33696	Analytical Method: Date Analyzed:	SM 4500-H+ 2007-01-10	Prep Method: Analyzed By:	
Prep Batch:	29269	Sample Preparation:	2007-01-10	Prepared By:	JR
		RL			
Parameter	Fl	ag Result	Units	Dilution	RL
pH		7.25	s.u.	1	0.00

# Sample: 113419 - HLSF-0085-HMW-061-0107

pH

Analysis: QC Batch: Prep Batch:	RCRA 7 Metals (Dissolved) 33562 29119	Analytical Method: Date Analyzed: Sample Preparation:	2007-01-11	Prep Method: Analyzed By: Prepared By:	RR
Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Si	lver	< 0.00200	mg/L	1	0.00200

continued ...

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#### sample 113419 continued . . .

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Dissolved Arsenic		< 0.00500	mg/L	l	0.00500
Dissolved Barium		< 0.0100	mg/L	1	0.0100
Dissolved Cadmium		< 0.00100	mg/L	1	0.00100
Dissolved Chromium		0.522	mg/L	1	0.00500
Dissolved Lead		< 0.00500	mg/L	1	0.00500
Dissolved Selenium		< 0.0100	mg/L	1	0.0100

#### Sample: 113419 - HLSF-0085-HMW-061-0107

Analytical Method: Prep Method: S 3005A Analysis: Salts, Dissolved S 6010B Analyzed By: TP QC Batch: 33634 Date Analyzed: 2007-01-12 Sample Preparation: 2007-01-10 Prepared By: TS Prep Batch: 29119

RL Parameter Result Units Dilution RLFlag 73.7 mg/L 0.500 Dissolved Potassium 3240 mg/L 100 0.500 Dissolved Sodium

#### Sample: 113419 - HLSF-0085-HMW-061-0107

Prep Method: S 3010A Analysis: Salts, Total Analytical Method: S 6010B QC Batch: Date Analyzed: 2007-01-16 Analyzed By: TP 33702 Prepared By: Prep Batch: 29147 Sample Preparation: 2007-01-11 TS

RLDilution Result Parameter Flag Units RL0.500 Total Potassium 74.7 mg/L 1 Total Sodium 3430 mg/L 100 0.500

#### Sample: 113419 - HLSF-0085-HMW-061-0107

Prep Method: N/A Analytical Method: SM 2540C Analysis: **TDS** Analyzed By: QC Batch: 33651 Date Analyzed: 2007-01-11 JG Sample Preparation: Prepared By: JR Prep Batch: 29234 2007-01-11

RLParameter Flag Result Units Dilution RLTotal Dissolved Solids 16200 mg/L 5.00

#### Sample: 113419 - HLSF-0085-HMW-061-0107

Analytical Method: Prep Method: N/A Analysis: TOC E 415.1 2007-01-19 Analyzed By: KV Date Analyzed: QC Batch: 33817 Prep Batch: 29372 Sample Preparation: Prepared By: KV

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		RL			
Parameter	Flag	Result	Units	Dilution	RL
Total Organic Carbon		3.65	mg/L	Į	1.00

## Sample: 113419 - HLSF-0085-HMW-061-0107

Analysis: Total 8 Metals Analytical Method: S 6010B Prep Method: S 3010A QC Batch: 33565 Date Analyzed: 2007-01-11 Analyzed By: RR Prep Batch: 29147 Sample Preparation: Prepared By: TS 2007-01-11 Analysis: Total 8 Metals Analytical Method: S 7470A Prep Method: N/A QC Batch: Date Analyzed: Analyzed By: TP 33682 2007-01-16 Prep Batch: 29251 Sample Preparation: 2007-01-15 Prepared By: TP

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Total Silver		< 0.00200	mg/L	l	0.00200
Total Arsenic		< 0.0100	mg/L	1	0.0100
Total Barium		< 0.0100	mg/L	1	0.0100
Total Cadmium		< 0.00100	mg/L	1	0.00100
Total Chromium		0.564	mg/L	1	0.00500
Total Mercury		< 0.000200	mg/L	1	0.000200
Total Lead		< 0.00500	mg/L	1	0.00500
Total Selenium		0.0970	mg/L	1	0.0100

#### Sample: 113419 - HLSF-0085-HMW-061-0107

Analysis: Zn, Dissolved Analytical Method: S 6010B Prep Method: S 3005A QC Batch: 33562 Date Analyzed: Analyzed By: RR 2007-01-11 Prep Batch: 29119 Sample Preparation: 2007-01-10 Prepared By: TS

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Dissolved Zine		< 0.00500	mg/L	1	0.00500

#### Sample: 113419 - HLSF-0085-HMW-061-0107

Analysis: Zn, Total Analytical Method: S 6010B Prep Method: S 3010A OC Batch: Date Analyzed: Analyzed By: 33565 2007-01-11 RR Prep Batch: 29147 Sample Preparation: 2007-01-11 Prepared By: TS

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Total Zinc		< 0.00500	mg/L	1	0.00500

#### Method Blank (1) QC Batch: 33562

QC Batch: 33562 Date Analyzed: 2007-01-11 Analyzed By: RR Prep Batch: 29119 QC Preparation: 2007-01-10 Prepared By: TS

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		MDL		
Parameter	Flag	Result	Units	RL
Dissolved Copper		<0.00127	mg/L	0.0125
Method Blank (1)	QC Batch: 33562			
QC Batch: 33562		Date Analyzed: 2007-01-11		Analyzed By: RR
Prep Batch: 29119		QC Preparation: 2007-01-10		Prepared By: TS
		MDL		
Parameter	Flag	Result	Units	RL
Dissolved Zinc		< 0.00300	mg/L	0.005
Method Blank (1)	QC Batch: 33562			
QC Batch: 33562		Date Analyzed: 2007-01-11		Analyzed By: RR
Prep Batch: 29119		QC Preparation: 2007-01-10		Prepared By: TS
		MDL		
Parameter	Flag	Result	Units	RL
Dissolved Silver		< 0.000199	mg/L	0.002
Dissolved Arsenic		< 0.00360	mg/L	0.005
Dissolved Barium		<0.00450	mg/L	0.01
Dissolved Cadmium	•	<0.000577	mg/L	0.001
Dissolved Chromium		<0.00357 <0.00398	mg/L	0.005 0.005
Dissolved Lead Dissolved Selenium		<0.00556	mg/L mg/L	0.00
Method Blank (1)	QC Batch: 33565			
QC Batch: 33565		Date Analyzed: 2007-01-11 QC Preparation: 2007-01-11		Analyzed By: RR Prepared By: TS
Prep Batch: 29147		QC Freparation. 2007-01-11		riepaied by. 13
D	<b>Y</b> 21	MDL	X 1 1/2	DI
Parameter	Flag	Result <0.00127	Units	RL 0.005
Total Copper		<0.00127	mg/L	0.00
Method Blank (1)	QC Batch: 33565			
QC Batch: 33565		Date Analyzed: 2007-01-11		Analyzed By: RR
Prep Batch: 29147		QC Preparation: 2007-01-11		Prepared By: TS
		MDL		
Parameter	Flag	Result	Units	RL
Total Phosphorous		< 0.0229	mg/L	0.03

Parameter

Dissolved Potassium

Dissolved Sodium

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ELSTF Groundwater Sample:

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**HELSTF** Groundwater Samples Method Blank (1) QC Batch: 33565 OC Batch: Date Analyzed: 2007-01-11 Analyzed By: RR 33565 Prepared By: TS Prep Batch: 29147 QC Preparation: 2007-01-11 **MDL** Parameter Flag Result Units RL Total Zinc 0.005 < 0.000666 mg/L Method Blank (1) QC Batch: 33565 Date Analyzed: Analyzed By: RR QC Batch: 33565 2007-01-11 Prepared By: Prep Batch: 29147 QC Preparation: 2007-01-11 TS MDL Flag Parameter Result Units RL Total Silver mg/L 0.002 < 0.000274 Total Arsenic < 0.00489 mg/L 0.01 Total Barium < 0.000450 mg/L 0.01 Total Cadmium 0.001 < 0.000268 mg/L **Total Chromium** < 0.00357 mg/L 0.005 0.005 Total Lead < 0.00310 mg/L Total Selenium < 0.00556 mg/L 0.01 Method Blank (1) QC Batch: 33613 QC Batch: 33613 Date Analyzed: 2007-01-10 Analyzed By: DR Prep Batch: 29207 QC Preparation: 2007-01-10 Prepared By: DR MDL Units RLParameter Flag Result uMHOS/cm Specific Conductance 0.00 Method Blank (1) QC Batch: 33634 QC Batch: Date Analyzed: 2007-01-12 Analyzed By: TP 33634 Prepared By: Prep Batch: 29119 QC Preparation: 2007-01-10 TS MDL

Result

2.21

< 0.0297

Units

mg/L

mg/L

RL

0.5

0.5

Flag

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Method Blank (1)

QC Batch: 33640

QC Batch: 33640 Prep Batch: 29225 Date Analyzed: 2007-01-11 QC Preparation: 2007-01-11 Analyzed By: Prepared By:

WB WB

**MDL** 

Parameter	Flag	Result	Units	RL
Fluoride		< 0.0119	mg/L	0.2
Nitrite-N		< 0.0128	mg/L	0.2
Nitrate-N		< 0.0106	mg/L	0.2

Method Blank (1)

QC Batch: 33651

QC Batch: 33651 Prep Batch: 29234 Date Analyzed: 2007-01-11 QC Preparation: 2007-01-11 Analyzed By: JG Prepared By: JG

		MDL		
Parameter	Flag	Result	Units	RL
Total Dissolved Solids		< 5.00	mg/L	5

Method Blank (1)

QC Batch: 33682

QC Batch: 33682 Prep Batch: 29251

Date Analyzed: 2007-01-16 QC Preparation: 2007-01-15

Analyzed By: TP Prepared By: TP

MDL

Parameter	Flag	Result	Units	RL
Total Mercury		< 0.0000217	mg/L	0.0002

Method Blank (1)

QC Batch: 33694

QC Batch: 33694 Prep Batch: 29267

Date Analyzed:

2007-01-16

Analyzed By: JG JG

QC Preparation: 2007-01-16

Prepared By:

MDL

Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		< 1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		< 4.00	mg/L as CaCo3	4
Total Alkalinity		<2.38	mg/L as CaCo3	4

Method Blank (1)

QC Batch: 33702

QC Batch: 33702 Prep Batch: 29147 Date Analyzed: 2007-01-16 QC Preparation: 2007-01-11

Analyzed By: TP Prepared By: TS

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Parameter	Floo	MDL Result	1 leike	DI
Total Potassium	Flag	0.598	Units mg/L	RL 0.5
Total Sodium		1.06	mg/L	0.5
Total boatain		1.00	mg D	0,0
Method Blank (1)	QC Batch: 33752			
QC Batch: 33752		Date Analyzed: 2007-01-12	Analyzed	By: WB
Prep Batch: 29287		QC Preparation: 2007-01-11	Prepared	
<b>n</b>	70	MDL		
Parameter	Flag	Result	Units	RL
Chloride	The state of the s	<0.0181	mg/L	0.5
Method Blank (1)	QC Batch: 33757			
QC Batch: 33757		Date Analyzed: 2007-01-16	Analyzeo	l By: WB
Prep Batch: 29291		QC Preparation: 2007-01-17	Prepared	
			•	·
*	***	MDL		
Parameter	Flag	Result	Units	RL
Bromide		< 0.0429	mg/L	0.2
Method Blank (1)	QC Batch: 33761			
QC Batch: 33761		Date Analyzed: 2007-01-17	Analyzeo	By: WB
Prep Batch: 29295		QC Preparation: 2007-01-16	Prepared	
•			,	3
		MDL		
Parameter	Flag	Result	Units	RL
Sulfate		< 0.0485	mg/L	0.5
Method Blank (1)	QC Batch: 33817			
QC Batch: 33817		Date Analyzed: 2007-01-19	Analyze	d By: KV
Prep Batch: 29372		QC Preparation: 2007-01-19	Prepared	
		MDL		
Parameter		lag Result	Units	RL
Total Organic Carbo	n	< 0.382	mg/L	1

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Duplicates (1)

QC Batch: 33613

Date Analyzed:

2007-01-10

Analyzed By: DR

Prep Batch: 29207 QC Preparation: 2007-01-10

Prepared By: DR

	Duplicate	Sample				RPD
Param	Result	Result	Units	Dilution	RPD	Limit
Specific Conductance	13900	13900	μMHOS/cm	1	0	6.7

Duplicates (1)

QC Batch: 33651 Prep Batch: 29234 Date Analyzed: 2007-01-11 QC Preparation: 2007-01-11

Analyzed By: JG

Prepared By: JG

	Duplicate	Sample				RPD
Param	Result	Result	Units	Dilution	RPD	Limit
Total Dissolved Solids	16400	16200	mg/L	1	1	20

Duplicates (1)

QC Batch: 33694 Prep Batch: 29267 Date Analyzed: 2007-01-16 QC Preparation: 2007-01-16 Analyzed By: JG Prepared By: JG

RPD Duplicate Sample Param Result Result Units Dilution **RPD** Limit Hydroxide Alkalinity < 1.00<1.00 mg/L as CaCo3 0 6.3 < 1.00 <1.00 mg/L as CaCo3 0 6.3 Carbonate Alkalinity 1 Bicarbonate Alkalinity 206 202 mg/L as CaCo3 i 2 6.3 202 1 2 Total Alkalinity 206 mg/L as CaCo3 6.3

Duplicates (1)

QC Batch: 33696 Prep Batch: 29269 Date Analyzed: 2007-01-10 QC Preparation: 2007-01-10

Analyzed By: DR Prepared By: DR

RPD Duplicate Sample Param Result Result Units Dilution **RPD** Limit 7.35 pΗ 7.35 0 20 s.u.

**Laboratory Control Spike (LCS-1)** 

QC Batch: 33562 Prep Batch: 29119 Date Analyzed: 20 QC Preparation: 20

2007-01-11

Analyzed By: RR

ation: 2007-01-10 Prepared By: TS

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Dissolved Copper	0.123	mg/L	1	0.125	< 0.00127	98	84.3 - 114

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LCSD Spike Matrix RPD Rec. Param Result Units Dil. Amount Result Rec. Limit **RPD** Limit Dissolved Copper 0.119 84.3 - 114 mg/L 0.125 < 0.0012795 20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

#### Laboratory Control Spike (LCS-1)

QC Batch: 33562 Prep Batch: 29119

Date Analyzed: 2007-01-11 QC Preparation: 2007-01-10 Analyzed By: RR Prepared By: TS

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Dissolved Zinc	0.227	mg/L	1	0.250	< 0.00300	91	84.7 - 113

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Dissolved Zinc	0.224	mg/L	1	0.250	< 0.00300	90	84.7 - 113	l	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

# Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch: 29119

33562

Date Analyzed:

2007-01-11 QC Preparation: 2007-01-10 Analyzed By: RR

Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Silver	0.118	mg/L	1	0.125	< 0.000199	94	86.2 - 116
Dissolved Arsenic	0.515	mg/L	1	0.500	< 0.00360	103	78.7 - 116
Dissolved Barium	0.953	mg/L	1	1.00	< 0.000450	95	85 - 114
Dissolved Cadmium	0.231	mg/L	1	0.250	< 0.000577	92	83.3 - 113
Dissolved Chromium	0.102	mg/L	I	0.100	< 0.00357	102	83 - 112
Dissolved Lead	0.492	mg/L	1	0.500	< 0.00398	98	81.1 - 111
Dissolved Selenium	0.455	mg/L	1	0.500	< 0.00556	91	69.6 - 111

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Dissolved Silver	0.116	mg/L	1	0.125	< 0.000199	93	86.2 - 116	2	20
Dissolved Arsenic	0.447	mg/L	1	0.500	< 0.00360	89	78.7 - 116	14	20
Dissolved Barium	0.943	mg/L	l	1.00	< 0.000450	94	85 - 114	1	20
Dissolved Cadmium	0.231	mg/L	1	0.250	< 0.000577	92	83.3 - 113	0	20
Dissolved Chromium	0.0980	mg/L	1	0.100	< 0.00357	98	83 - 112	4	20
Dissolved Lead	0.491	mg/L	1	0.500	< 0.00398	98	81.1 - 111	0	20
Dissolved Selenium	0.432	mg/L	}	0.500	< 0.00556	86	69.6 - 111	5	20

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Laboratory Control Spike (LCS-1)

OC Batch: 33565 Prep Batch: 29147

2007-01-11 Date Analyzed: QC Preparation: 2007-01-11

Analyzed By: RR Prepared By: TS

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LCS Spike Matrix Rec. Result Units Dil. Amount Result Rec. Limit Param < 0.00127 106 83.4 - 117 Total Copper 0.133 mg/L 0.125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

LCSD RPD Spike Matrix Rec. **RPD** Param Result Units Dil. Amount Result Rec. Limit Limit Total Copper 0.132 0.125 < 0.00127106 83.4 - 117 20 mg/L

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

OC Batch: 33565 Prep Batch: 29147 Date Analyzed: 2007-01-11 QC Preparation: 2007-01-11 Analyzed By: RR Prepared By: TS

LCS Spike Matrix Rec. Param Result Units Dil. Amount Result Rec. Limit < 0.0229 Total Phosphorous 0.507 0.500 101 87.3 - 114 mg/L

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

LCSD Rec. RPD Spike Matrix Amount **RPD** Param Result Units Dil. Result Rec. Limit Limit 96 87.3 - 114 20 Total Phosphorous 0.480 mg/L 0.500 < 0.0229 6

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 33565 Prep Batch: 29147 Date Analyzed: 2007-01-11 QC Preparation: 2007-01-11

Analyzed By: RR Prepared By: TS

LCS Spike Matrix Rec. Result Rec. Limit Param Result Units Dil. Amount 0.245 0.250 < 0.000666 98 82.9 - 109 Total Zinc mg/L

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

**RPD LCSD** Spike Matrix Rec. Limit Param Result Units Dil. Amount Result Rec. RPD Limit Total Zinc 0.238 mg/L 0.250 < 0.000666 95 82.9 - 109 3 20 1

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

OC Batch: 33565 Prep Batch: 29147 Date Analyzed: 2007-01-11 QC Preparation: 2007-01-11

Analyzed By: RR Prepared By: TS

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D	LCS	X T. 1.	Y5.11	Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Total Silver	0.127	mg/L	ĺ	0.125	< 0.000274	102	87.9 - 111
Total Arsenic	0.526	mg/L	1	0.500	< 0.00489	105	86.8 - 108
Total Barium	1.05	mg/L	1	1.00	< 0.000450	105	88.8 - 110
Total Cadmium	0.255	mg/L	l	0.250	< 0.000268	102	86.8 - 110
Total Chromium	0.0990	mg/L	1	0.100	< 0.00357	99	86.5 - 115
Total Lead	0.525	mg/L	1	0.500	< 0.00310	105	83 - 109
Total Selenium	0.457	mg/L	1	0.500	< 0.00556	91	75 - 112

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Total Silver	0.126	mg/L	1	0.125	< 0.000274	101	87.9 - 111	1	20
Total Arsenic	0.508	mg/L	l	0.500	< 0.00489	102	86.8 - 108	4	20
Total Barium	1.03	mg/L	l	1.00	< 0.000450	103	88.8 - 110	2	20
Total Cadmium	0.248	mg/L	1	0.250	< 0.000268	99	86.8 - 110	3	20
Total Chromium	0.0930	mg/L	1	0.100	< 0.00357	93	86.5 - 115	6	20
Total Lead	0.507	mg/L	1	0.500	< 0.00310	101	83 - 109	4	20
Total Selenium	0.463	mg/L	1	0.500	< 0.00556	93	75 - 112	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

# Laboratory Control Spike (LCS-1)

QC Batch: 33634 Prep Batch: 29119 Date Analyzed: 2007-01-12 QC Preparation: 2007-01-10 Analyzed By: TP Prepared By: TS

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	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Dissolved Potassium	50.9	mg/L	1	50.0	< 0.0297	102	78.8 - 114
Dissolved Sodium	49.8	mg/L	1	50.0	< 0.0309	100	79.4 - 123

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Dissolved Potassium	51.5	mg/L	1	50.0	< 0.0297	103	78.8 - 114	l	20
Dissolved Sodium	49.8	mg/L	i	50.0	< 0.0309	100	79.4 - 123	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

#### **Laboratory Control Spike (LCS-1)**

QC Batch: 33640 Prep Batch: 29225 Date Analyzed: 2007-01-11 QC Preparation: 2007-01-11 Analyzed By: WB Prepared By: WB

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Fluoride	2.41	mg/L	1	2.50	< 0.0119	96	90 - 110
Nitrite-N	2.51	mg/L	1	2.50	< 0.0128	100	90 - 110
Nitrate-N	2.50	mg/L	1	2.50	< 0.0106	100	90 - 110

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Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Fluoride	2.47	mg/L	l	2.50	< 0.0119	99	90 - 110	2	20
Nitrite-N	2.52	mg/L	1	2.50	< 0.0128	101	90 - 110	0	20
Nitrate-N	2.51	mg/L	i	2.50	< 0.0106	100	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

#### Laboratory Control Spike (LCS-1)

QC Batch: 33682 Prep Batch: 29251

2007-01-16 Date Analyzed: QC Preparation: 2007-01-15 Analyzed By: TP Prepared By: TP

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Total Mercury	0.000980	mg/L	ì	0.00100	< 0.0000217	98	85.8 - 107.3

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Total Mercury	0.00101	mg/L	1	0.00100	< 0.0000217	101	85.8 - 107.3	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

### Laboratory Control Spike (LCS-1)

QC Batch: 33702 Prep Batch: 29147

Date Analyzed: 2007-01-16 QC Preparation: 2007-01-11

Analyzed By: TP Prepared By: TS

LCS Spike Matrix Rec. Param Result Units Dil. Amount Result Limit Rec. Total Potassium 53.5 mg/L 1 50.0 < 0.0297 107 85 - 115 Total Sodium 54.2 mg/L ĺ 50.0 < 0.0309 108 87.3 - 124

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Total Potassium	52.5	mg/L	l	50.0	< 0.0297	105	85 - 115	2	20
Total Sodium	53.4	mg/L	1	50.0	< 0.0309	107	87.3 - 124	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

#### Laboratory Control Spike (LCS-1)

QC Batch: 33752 Prep Batch: 29287 Date Analyzed: 2007-01-12 QC Preparation: 2007-01-11

Analyzed By: WB Prepared By: WB

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride	11.7	mg/L	1	12.5	< 0.0181	94	90 - 110

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	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	11.5	mg/L	1	12.5	< 0.0181	92	90 - 110	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

#### Laboratory Control Spike (LCS-1)

QC Batch: 33757 Prep Batch: 29291

Date Analyzed: 2007-01-16 QC Preparation: 2007-01-17 Analyzed By: WB Prepared By: WB

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LCS Matrix Rec. Spike Param Result Units Dil. Amount Result Rec. Limit Bromide 2.35 mg/L 2.50 < 0.0429 94 90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Bromide	2.47	mg/L	1	2.50	< 0.0429	99	90 - 110	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

#### Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch: 29295

33761

Date Analyzed: QC Preparation:

2007-01-17 2007-01-16 Analyzed By: WB

Prepared By: WB

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Sulfate	11.8	mg/L	l	12.5	< 0.0485	94	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Sulfate	11.7	mg/L	1	12.5	< 0.0485	94	90 - 110	()	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

#### Laboratory Control Spike (LCS-1)

QC Batch: 33817 Prep Batch: 29372

Date Analyzed:

2007-01-19 QC Preparation: 2007-01-19 Analyzed By: KV

Prepared By: KV

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Total Organic Carbon	8.83	mg/L	1	10.0	< 0.382	88	70 ~ 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Total Organic Carbon	8.25	mg/L	l	10.0	< 0.382	82	70 - 130	7	20

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Matrix Spike (MS-1) Spiked Sample: 113365

OC Batch: 33562 Prep Batch: 29119

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Date Analyzed: 2007-01-11 QC Preparation: 2007-01-10 Analyzed By: RR Prepared By:

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Dissolved Copper	0.113	mg/L	l	0.125	< 0.00127	90	81.5 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Dissolved Copper	0.118	mg/L	1	0.125	< 0.00127	94	81.5 - 125	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 113365

QC Batch: 33562

Param

Dissolved Zinc

Date Analyzed: 2007-01-11 2007-01-10

mg/L

Analyzed By: RR Prepared By: TS

80.4 - 120

84

Prep Batch: 29119 QC Preparation:

MS Spike Matrix Rec. Result Dil. Result Limit Units Amount Rec.

0.01

0.250

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

0.221

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Dissolved Zinc	0.235	mg/L	1	0.250	0.01	90	80.4 - 120	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 113365

QC Batch: 33562 Prep Batch: 29119 Date Analyzed: 2007-01-11 QC Preparation: 2007-01-10 Analyzed By: RR Prepared By: TS

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Dissolved Silver	0.119	mg/L	j	0.125	< 0.000199	95	90.1 - 120
Dissolved Arsenic	2.80	mg/L	1	0.500	2.39	82	75 - 114
Dissolved Barium	0.875	mg/L	l	1.00	0.039	84	75 - 125
Dissolved Cadmium	0.226	mg/L	1	0.250	< 0.000577	90	75 - 112
Dissolved Chromium	0.0910	mg/L	1	0.100	< 0.00357	91	75 - 121
Dissolved Lead	0.470	mg/L	l	0.500	< 0.00398	94	75 - 111
Dissolved Selenium	0.578	mg/L	1	0.500	0.19	78	75 - 118

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Dissolved Silver	0.116	mg/L	1	0.125	< 0.000199	93	90.1 - 120	3	20

continued ...

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matrix spikes continued . . .

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Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Arsenic	2.84	mg/L	1	0.500	2.39	90	75 - 114	1	20
Dissolved Barium	0.868	mg/L	1	1.00	0.039	83	75 - 125	1	20
Dissolved Cadmium	0.227	mg/L	1	0.250	< 0.000577	91	75 - 112	0	20
Dissolved Chromium	0.0920	mg/L	1	0.100	< 0.00357	92	75 - 121	1	20
Dissolved Lead	0.472	mg/L	1	0.500	< 0.00398	94	75 - 111	0	20
Dissolved Selenium	0.626	mg/L	1	0.500	0.19	87	75 - 118	8	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 113419

QC Batch: 33565 Prep Batch: 29147 Date Analyzed: 2007-01-11 QC Preparation: 2007-01-11 Analyzed By: RR Prepared By: TS

MS Matrix Rec. Spike Result Param Units Dil. Amount Result Rec. Limit < 0.00127 94 83.8 - 118 0.118 0.125 Total Copper mg/L

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Total Copper	0.123	mg/L	ĺ	0.125	< 0.00127	98	83.8 - 118	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 113419

QC Batch: 33565 Prep Batch: 29147 Date Analyzed: 2007-01-11 QC Preparation: 2007-01-11 Analyzed By: RR Prepared By: TS

MS Spike Matrix Rec. Result Rec. Limit Param Units Dil. Amount Result < 0.0229 93 70.1 - 115 Total Phosphorous 0.464 0.500 mg/L

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Total Phosphorous	0.507	mg/L	1	0.500	< 0.0229	101	70.1 - 115	9	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 113419

QC Batch: 33565 Prep Batch: 29147 Date Analyzed: 2007-01-11 QC Preparation: 2007-01-11

Analyzed By: RR Prepared By: TS

MS Matrix Spike Rec. Dil. Amount Result Rec. Limit Param Result Units < 0.000666 0.227 0.250 91 75.5 - 113 Total Zinc mg/L

**HELSTF** Groundwater Samples

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Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Total Zinc	0.231	mg/L	1	0.250	< 0.000666	92	75.5 - 113	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 113419

QC Batch: 33565 Prep Batch: 29147 Date Analyzed: 2007-01-11 QC Preparation: 2007-01-11 Analyzed By: RR Prepared By: TS

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Total Silver	0.120	mg/L	1	0.125	< 0.000274	96	88.2 - 114
Total Arsenic	0.434	mg/L	1	0.500	< 0.00489	87	75.9 - 116
Total Barium	0.878	mg/L	1	1.00	< 0.000450	88	64.9 - 129
Total Cadmium	0.221	mg/L	1	0.250	< 0.000268	88	66.5 - 121
Total Chromium	0.661	mg/L	1	0.100	0.564	97	69.2 - 129
Total Lead	0.472	mg/L	1	0.500	< 0.00310	94	71.9 - 115
Total Selenium	0.591	mg/L	1	0.500	0.097	99	66.8 - 116

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Total Silver	0.116	mg/L	1	0.125	< 0.000274	93	88.2 - 114	3	20
Total Arsenic	0.444	mg/L	1	0.500	< 0.00489	89	75.9 - 116	2	20
Total Barium	0.861	mg/L	l	1.00	< 0.000450	86	64.9 - 129	2	20
Total Cadmium	0.223	mg/L	1	0.250	< 0.000268	89	66.5 - 121	1	20
Total Chromium	0.664	mg/L	1	0.100	0.564	100	69.2 - 129	0	20
Total Lead	0.482	mg/L	1	0.500	< 0.00310	96	71.9 - 115	2	20
Total Selenium	0.552	mg/L	1	0.500	0.097	91	66.8 - 116	7	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 113365

QC Batch: 33634 Prep Batch: 29119 Date Analyzed: 2007-01-12 QC Preparation: 2007-01-10 Analyzed By: TP Prepared By:

		MS			Spike	Matrix		Rec.
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit
Dissolved Potassium		98.1	mg/L	1	50.0	45.4	105	76.8 - 117
Dissolved Sodium	1	582	mg/L	l	50.0	511	142	84.2 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Dissolved Potassium	96.8	mg/L	1	50.0	45.4	103	76.8 - 117	1	20

continued ...

<sup>&</sup>lt;sup>1</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

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matrix spikes continued . . .

		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Dissolved Sodium	2	586	mg/L	1	50.0	511	150	84.2 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 113688

QC Batch: 33640 Prep Batch: 29225 Date Analyzed: 2007-01-11 QC Preparation: 2007-01-11

Analyzed By: WB Prepared By: WB

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MS Matrix Spike Rec. Param Result Units Dil. Amount Result Rec. Limit Fluoride 93 73.4 - 119 15.2 mg/L 5 12.5 3.5968 3 Nitrite-N 4.16 5 < 0.0640 33 90.5 - 115 mg/L 12.5 4 5 Nitrate-N 23.3 mg/L 12.5 1.72 173 88.4 - 118

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Fluoride		15.2	mg/L	5	12.5	3.5968	93	73.4 - 119	0	20
Nitrite-N	5	4.17	mg/L	5	12.5	< 0.0640	33	90.5 - 115	0	20
Nitrate-N	6	23.4	mg/L	5	12.5	1.72	173	88.4 - 118	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 113769

OC Batch: 33682 Prep Batch: 29251 Date Analyzed: 2007-01-16 QC Preparation: 2007-01-15 Analyzed By: TP Prepared By: TP

MS Spike Matrix Rec. Param Result Units Dil. Result Limit Amount Rec. Total Mercury 0.000970 0.00100 < 0.0000217 97 77.5 - 108.9 mg/L

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Total Mercury	0.000930	mg/L	1	0.00100	< 0.0000217	93	77.5 - 108.9	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 113463

QC Batch: 33702 Prep Batch: 29147 Date Analyzed: 2007-01-16 QC Preparation: 2007-01-11

Analyzed By: TP Prepared By: TS

<sup>&</sup>lt;sup>2</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>&</sup>lt;sup>3</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>&</sup>lt;sup>4</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>&</sup>lt;sup>5</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>&</sup>lt;sup>6</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

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MS Spike Matrix Rec. Result Dil. Amount Result Rec. Limit Param Units 49.4 75 - 125 Total Potassium 50.0 103 101 mg/L 75 - 125 Total Sodium 1200 mg/L 1 50.0 1170 60

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Total Potassium	103	mg/L	1	50.0	49.4	107	75 - 125	2	20
Total Sodium	1220	mg/L	1	50.0	1170	100	75 - 125	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 113420

QC Batch: 33752 Prep Batch: 29287 Date Analyzed: 2007-01-12 QC Preparation: 2007-01-11

Analyzed By: WB Prepared By: WB

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MS Spike Matrix Rec. Limit Param Result Units Dil. Amount Result Rec. 9630 500 6250 3590 97 10 - 188 Chloride mg/L

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	9220	mg/L	500	6250	3590	90	10 - 188	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 113420

QC Batch: 33757 Prep Batch: 29291 Date Analyzed: 2007-01-16 QC Preparation: 2007-01-17

Analyzed By: WB Prepared By: WB

MS Matrix Rec. Spike Amount Result Rec. Limit Param Result Units Dil. Bromide 19.9 mg/L 12.5 < 0.214 159 91.1 - 123

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Bromide	9	20.4	mg/L	5	12.5	< 0.214	163	91.1 - 123	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 113640

QC Batch: 33761 Prep Batch: 29295 Date Analyzed: 2007-01-17 QC Preparation: 2007-01-16

Analyzed By: WB
Prepared By: WB

<sup>&</sup>lt;sup>7</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>8</sup> Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>&</sup>lt;sup>9</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

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	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Sulfate	4270	mg/L	100	1250	3160	89	83.1 - 114

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Sulfate	4300	mg/L	100	1250	3160	91	83.1 - 114	l	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 113420

QC Batch: 33817 Prep Batch: 29372 Date Analyzed: 2007-01-19 QC Preparation: 2007-01-19 Analyzed By: KV Prepared By: ΚV

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MS Spike Matrix Rec. Amount Result Limit Param Result Units Dil. Rec. 10.9 10.0 1.36 95 70 - 130 Total Organic Carbon mg/L 1

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Total Organic Carbon	12.0	mg/L	1	10.0	1.36	106	70 - 130	10	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1)

QC Batch: 33562

Date Analyzed: 2007-01-11

Analyzed By: RR

			ICVs	<b>ICVs</b>	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Dissolved Copper		mg/L	1.00	0.936	94	90 - 110	2007-01-11

Standard (ICV-1)

QC Batch: 33562

Date Analyzed: 2007-01-11

Analyzed By: RR

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Dissolved Zinc		mg/L	1.00	0.961	96	90 - 110	2007-01-11

Standard (ICV-1)

QC Batch: 33562

Date Analyzed: 2007-01-11

Analyzed By: RR

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Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Silver		mg/L	0.125	0.120	96	90 - 110	2007-01-11
Dissolved Arsenic		mg/L	1.00	0.969	97	90 - 110	2007-01-11
Dissolved Barium		mg/L	1.00	0.954	95	90 - 110	2007-01-11
Dissolved Cadmium		mg/L	1.00	0.954	95	95 - 105	2007-01-11
Dissolved Chromium		mg/L	1.00	0.911	91	90 - 110	2007-01-11
Dissolved Lead		mg/L	1.00	0.976	98	90 - 110	2007-01-11
Dissolved Selenium		mg/L	1.00	0.924	92	90 - 110	2007-01-11

# Standard (CCV-1)

QC Batch: 33562

Date Analyzed: 2007-01-11 Analyzed By: RR

**CCVs CCVs CCVs** Percent True Found Percent Recovery Date Analyzed Param Flag Units Conc. Conc. Limits Recovery 90 - 110 Dissolved Copper mg/L 1.00 0.993 99 2007-01-11

### Standard (CCV-1)

QC Batch: 33562

Date Analyzed: 2007-01-11

Analyzed By: RR

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Dissolved Zinc		mg/L	1.00	1.03	103	90 - 110	2007-01-11

# Standard (CCV-1)

QC Batch: 33562

Date Analyzed: 2007-01-11

Analyzed By: RR

			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Dissolved Silver		mg/L	0.125	0.127	102	90 - 110	2007-01-11
Dissolved Arsenic		mg/L	1.00	0.975	98	90 - 110	2007-01-11
Dissolved Barium		mg/L	1.00	1.01	101	90 - 110	2007-01-11
Dissolved Cadmium		mg/L	1.00	0.965	96	90 - 110	2007-01-11
Dissolved Chromium		mg/L	1.00	0.965	96	90 - 110	2007-01-11
Dissolved Lead		mg/L	1.00	0.959	96	90 - 110	2007-01-11
Dissolved Selenium		mg/L	1.00	0.957	96	90 - 110	2007-01-11

### Standard (ICV-1)

QC Batch: 33565

Date Analyzed: 2007-01-11

Analyzed By: RR

Work Order: 7011001 **HELSTF** Groundwater Samples

			ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Copper		mg/L	1.00	0.936	94	90 - 110	2007-01-11

# Standard (ICV-1)

QC Batch: 33565

Date Analyzed: 2007-01-11

Analyzed By: RR

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			<b>ICVs</b>	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Phosphorous		mg/L	5.00	4.51	90	90 - 110	2007-01-11

### Standard (ICV-1)

QC Batch: 33565

Date Analyzed: 2007-01-11

Analyzed By: RR

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Zinc		mg/L	1.00	0.961	96	90 - 110	2007-01-11

### Standard (ICV-1)

QC Batch: 33565

Date Analyzed: 2007-01-11

Analyzed By: RR

			ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Silver		mg/L	0.125	0.120	96	90 - 110	2007-01-11
Total Arsenic		mg/L	1.00	0.969	97	90 - 110	2007-01-11
Total Barium		mg/L	1.00	0.954	95	90 - 110	2007-01-11
Total Cadmium		mg/L	1.00	0.954	95	90 - 110	2007-01-11
Total Chromium		mg/L	1.00	0.911	91	90 - 110	2007-01-11
Total Lead		mg/L	1.00	0.976	98	90 - 110	2007-01-11
Total Selenium		mg/L	1.00	0.924	92	90 - 110	2007-01-11

### Standard (CCV-1)

QC Batch: 33565

Date Analyzed: 2007-01-11

Analyzed By: RR

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Copper		mg/L	1.00	1.02	102	90 - 110	2007-01-11

# Standard (CCV-1)

QC Batch: 33565

Date Analyzed: 2007-01-11

Analyzed By: RR

Work Order: 7011001 **HELSTF** Groundwater Samples

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Phosphorous		mg/L	5.00	4.90	98	90 - 110	2007-01-11

Standard (CCV-1)

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QC Batch: 33565

Date Analyzed: 2007-01-11

Analyzed By: RR

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			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Zinc		mg/L	1.00	1.05	105	90 - 110	2007-01-11

Standard (CCV-1)

QC Batch: 33565

Date Analyzed: 2007-01-11

Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Silver		mg/L	0.125	0.131	105	90 - 110	2007-01-11
Total Arsenic		mg/L	1.00	1.03	103	90 - 110	2007-01-11
Total Barium		mg/L	1.00	1.02	102	90 - 110	2007-01-11
Total Cadmium		mg/L	1.00	0.987	99	90 - 110	2007-01-11
Total Chromium		mg/L	1.00	0.986	99	90 - 110	2007-01-11
Total Lead		mg/L	1.00	0.983	98	90 - 110	2007-01-11
Total Selenium		mg/L	1.00	1.02	102	90 - 110	2007-01-11

Standard (ICV-1)

QC Batch: 33613

Date Analyzed: 2007-01-10

Analyzed By: DR

			<b>ICVs</b>	ICVs	<b>ICVs</b>	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Specific Conductance		μMHOS/cm	1410	1400	99	96.7 - 108	2007-01-10

Standard (CCV-1)

QC Batch: 33613

Date Analyzed: 2007-01-10

Analyzed By: DR

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Specific Conductance		μMHOS/cm	1410	1400	99	96.7 - 108	2007-01-10

Standard (ICV-1)

QC Batch: 33634

Date Analyzed: 2007-01-12

Analyzed By: TP

Work Order: 7011001

**HELSTF** Groundwater Samples

			ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Dissolved Potassium		mg/L	50.0	50.2	100	90 - 110	2007-01-12
Dissolved Sodium		mg/L	50.0	50.2	100	90 - 110	2007-01-12

### Standard (CCV-1)

QC Batch: 33634

Date Analyzed: 2007-01-12

Analyzed By: TP

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			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Dissolved Potassium		mg/L	50.0	50.2	100	90 - 110	2007-01-12
Dissolved Sodium		mg/L	50.0	50.5	101	90 - 110	2007-01-12

# Standard (ICV-1)

QC Batch: 33640

Date Analyzed: 2007-01-11

**ICVs** 

Analyzed By: WB

Percent

			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Fluoride		mg/L	2.50	2.42	97	90 - 110	2007-01-11
Nitrite-N		mg/L	2.50	2.52	101	90 - 110	2007-01-11
Nitrate-N		mg/L	2.50	2.49	100	90 - 110	2007-01-11

**ICVs** 

**ICVs** 

### Standard (CCV-1)

QC Batch: 33640

Date Analyzed: 2007-01-11

Analyzed By: WB

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Fluoride		mg/L	2.50	2.49	100	90 - 110	2007-01-11
Nitrite-N		mg/L	2.50	2.52	101	90 - 110	2007-01-11
Nitrate-N		mg/L	2.50	2.50	100	90 - 110	2007-01-11

### Standard (ICV-1)

QC Batch: 33651

Date Analyzed: 2007-01-11

Analyzed By: JG

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Dissolved Solids		mg/L	1000	998	100	94.4 - 106	2007-01-11

### Standard (CCV-1)

QC Batch: 33651

Date Analyzed: 2007-01-11

Analyzed By: JG

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**HELSTF** Groundwater Samples

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			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Dissolved Solids		mg/L	1000	1010	101	94.4 - 106	2007-01-11

### Standard (ICV-1)

QC Batch: 33682

Date Analyzed: 2007-01-16

Analyzed By: TP

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Mercury		mg/L	0.00100	0.00101	101	80 - 120	2007-01-16

### Standard (CCV-1)

QC Batch: 33682

Date Analyzed: 2007-01-16

Analyzed By: TP

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Mercury		mg/L	0.00100	0.000990	99	80 - 120	2007-01-16

### Standard (ICV-1)

QC Batch: 33694

Date Analyzed: 2007-01-16

Analyzed By: JG

			ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	< 1.00		0 - 105	2007-01-16
Carbonate Alkalinity		mg/L as CaCo3	0.00	236		0 - 105	2007-01-16
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	8.00		0 - 105	2007-01-16
Total Alkalinity		mg/L as CaCo3	250	244	98	93.7 - 99.9	2007-01-16

### Standard (CCV-1)

QC Batch: 33694

Date Analyzed: 2007-01-16

Analyzed By: JG

			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 105	2007-01-16
Carbonate Alkalinity		mg/L as CaCo3	0.00	236		0 - 105	2007-01-16
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	14.0		0 - 105	2007-01-16
Total Alkalinity		mg/L as CaCo3	250	250	100	93.7 - 99.9	2007-01-16

# Standard (ICV-1)

QC Batch: 33696

Date Analyzed: 2007-01-10

Analyzed By: DR

Chloride

mg/L

12.5

11.6

93

90 - 110

2007-01-12

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					······				
				IOV-	rayr.	IOI I	n.		
				ICVs True	ICVs Found	ICVs Percent	Percent	Date	
Param	Flag	1	Jnits	Conc.	Conc.		Recovery Limits		
рН	riag			7.00	6.98	Recovery 100	98.8 - 101	Analyzed 2007-01-10	
נות		····	s.u.	7.00	0.98	100	98.8 - 101	2007-01-10	
Standard (	(CCV-1)								
QC Batch:	33696			Date Anal	yzed: 2007-01	-10	Ana	lyzed By: DR	
				CCVs	CCVs	CCVs	Percent		
				True	Found	Percent	Recovery	Date	
Param	Flag	J	Jnits	Conc.	Conc.	Recovery	Limits	Analyzed	
pН			s.u.	7.00	7.00	100	98.8 - 101	2007-01-10	
Standard	(ICV-1)								
QC Batch:	33702			Date Anal	lyzed: 2007-01	-16	An	alyzed By: TP	
				ICVs	ICVs	ICVs	Percent		
				True	Found	Percent	Recovery	Date	
Param		Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
Total Potas	sium		mg/L	50.0	51.8	104	90 - 110	2007-01-16	
Total Sodi			mg/L	50.0	52.0	104	90 - 110	2007-01-16	
QC Batch:	33702			Date Anal	lyzed: 2007-01	-16	An	alyzed By: TP	
				CCVs	CCVs	CCVs	Percent		
				True	Found	Percent	Recovery	Date	
Param		Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
Total Potas	sium .		mg/L	50.0	50.0	100	90 - 110	2007-01-16	
Total Sodii	um		mg/L	50.0	50.5	101	90 - 110	2007-01-16	
Standard	(ICV-1)								
QC Batch:	33752			Date Anal	yzed: 2007-01	-12	Analyzed By: WB		
				ICVs	ICVs	ICVs	Percent		
				True	Found	Percent	Recovery	Date	
Param	Flag		Units	Conc.	Conc.	Recovery	Limits	Analyzed	
Chloride			mg/L	12.5	11.6	93	90 - 110	2007-01-12	
Standard	(CCV-1)					•			
QC Batch:	33752			Date Anal	yzed: 2007-01	-12	Ana	lyzed By: WB	
				CCVs	CCVs	CCVs	Percent		
				True	Found	Percent	Recovery	Date	
Param	Flag		Units	Conc.	Conc.	Recovery	Limits	Analyzed	
Chlorida	<del>-</del>		-22 cz / I	12.5	11.6	02	00 110	2007 01 12	

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Standard (ICV-1)

QC Batch: 33757

Date Analyzed: 2007-01-16

Analyzed By: WB

			ICVs	<b>ICVs</b>	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Bromide		mg/L	2.50	2.40	96	90 - 110	2007-01-16

Standard (CCV-1)

QC Batch: 33757

Date Analyzed: 2007-01-16

Analyzed By: WB

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Bromide		mg/L	2.50	2.51	100	90 - 110	2007-01-16

Standard (ICV-1)

QC Batch: 33761

Date Analyzed: 2007-01-17

Analyzed By: WB

			ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Sulfate		mg/L	12.5	12.0	96	90 - 110	2007-01-17

Standard (CCV-1)

QC Batch: 33761

Date Analyzed: 2007-01-17

Analyzed By: WB

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Sulfate		mg/L	12.5	12.0	96	90 - 110	2007-01-17

Standard (ICV-1)

QC Batch: 33817

Date Analyzed: 2007-01-19

Analyzed By: KV

			ICVs	<b>ICVs</b>	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Organic Carbon		mg/L	5.00	4.41	88	80 - 120	2007-01-19

Standard (CCV-1)

QC Batch: 33817

Date Analyzed: 2007-01-19

Analyzed By: KV

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CCVs CCVs CCVs Percent Recovery Limits True Found Percent Date Flag Param Units Conc. Conc. Recovery Analyzed Total Organic Carbon mg/L 5.00 4.74 95 80 - 120 2007-01-19